

Attitudes of Small-scale Forest Owners to their Properties in an Ageing Society: Findings of Survey in Yamaguchi Prefecture, Japan

Sato Noriko and Macel Premysl
Department of Forest and Forest Products Sciences
Faculty of Agriculture
Kyushu University, Fukuoka 812-8581, Japan

Fukawa Takafumi
Nihon Unisys
Tokyo 135-8560, Japan

Populations of most developed countries have been ageing, and the populations of Japanese mountain villages are estimated to have reached into a super-ageing society. In particular, because forestry is unprofitable and due to the economic recession in Japan, many small-scale forest owners face the problems of ageing. For policy-makers, it is important to assess the socioeconomic impacts of forest owners' ageing in order to ensure the sustainable management of forests. A survey was conducted of forest owners in Yamaguchi Prefecture, which is famous for overall depopulation and ageing of the rural population. It was found that 83% of 687 plantation forest owners who responded in the survey were 60 years or older and 76% did not have forestry income over the past three years, but 81% had kept up ownership of their forest as the traditional family property. In terms of forest management intentions, the respondents were found to consist of four types, namely 'family management', 'commissioned management', 'de-accession' and 'possession without proper management'. Differences in evaluations of hypothetical policies were found among the four types.

Keywords: devolution of family property, successor, forest owner types, sense of forest ownership, management intentions

INTRODUCTION

The majority of developed countries are suffering ageing populations and declining birth rates. It has been predicted that the number of people in rural areas and small-scale forest owners who are elderly will further increase in the future (Cabinet Office 2003, Ogawa 2003). The ageing of owners is linked to changes in the business objectives and the problem of succession of the forests they own, and it is necessary to obtain a clear picture of the effects of ageing in order to gain a view of sustainable forest management (Fukawa 2003, Sato 2005).

The ageing of forest owners has progressed the most among developed countries (Nakamura 2002). In Japan in particular, the movement of the population from

mountainous areas to urban areas was dramatic during the period of rapid economic growth (1955 to 1973). The national government opened markets for timber due to the increase in wood consumption in 1960s. Since 1985, in spite of the increased area of domestic forests, competitiveness of Japanese forestry has been declining because of rapid appreciation of the yen. As indicated by the current Japanese self-sufficiency rate for lumber of 18%, the economic activity in Japan's forests producing lumber is low, and the asset value of forests is declining. A great deal of research has been carried out about the ageing of forest owners and the stagnancy of forestry activities up until now, but there is inadequate research concerning the elderly forest owners' awareness of forest ownership, and their intentions of managing their forests in the future.

The objectives of this paper are to clarify (1) the current state of ageing and successors, (2) the relationship between the awareness of forest ownership and the level of management, and (3) the owners' intentions concerning forest management in the future. These objectives are examined through a survey of forest owners carried out in Yamaguchi Prefecture, an ideal location for this study because it is a small-scale forest ownership area.

STUDY AREA AND DATA COLLECTION METHOD

Yamaguchi Prefecture is located on the western end of the main Japanese island of Honshu, and its forest area is 436,133 ha with 71.4% of the prefecture covered by forest. Mountainous areas in the prefecture have relatively gentle slopes covered with forests typically privately owned (more than 90%). The percentage of land covered with plantation forest is 46.1%, with Japanese cedar and Japanese cypress the main species planted. The forests with trees in age class number 7 (36-40 years) requiring maintenance comprise 59% of the area. There are 33,114 forestry households (owning forests of an area of 1 ha or more), whose forests cover the bulk of privately owned forests, and the average forest area owned per household is small at 4.7 ha. Only 4.0% of households sold forestry products in 1999 (MAFF 2000).

The survey was carried out in October and November 2003, with the cooperation of the Forest Policy Planning Division of the prefectural government and the Forest Owners' Cooperative Association in Yamaguchi. Respondents were randomly extracted from among forest owners throughout Yamaguchi Prefecture according to region and hierarchy, and the questionnaires were sent out and returned by mail. The questions concerned attributes of the forestry household, the state of forest management, and owners' intentions with regard to future management and policies. A total of 1,500 questionnaires were sent out, and 930 (62%) were returned.

In the responses, considerable differences were observed according to the state of the forest resources owned, i.e. whether the forest was mainly plantation or mainly natural forest. In this paper, problems of forest management are analysed focusing only on the responses of forest owners who own plantations. The responses of the 719 plantation owners who classified their forests as 'mainly artificial coniferous forest' or 'half-natural forest and half-artificial forest' in answer to the question concerning the species of forest owned, were analysed. First, the characteristics of the forest owners were assessed according to the size of the forest owned. Secondly, households were classified into four types – termed (1) 'family management', (2)

‘commissioned management’, (3) ‘de-accession’ and (4) ‘possession without proper management’ – according to their intent towards forest management in the future, and the characteristics and support methods for each group examined.

ANALYSIS OF SURVEY RESPONSES WITH REGARDS TO FOREST AREA

Respondent Attributes

A breakdown of forest owners who responded to the survey according to the size of forest owned, showed that 271 owned forests of less than 5 ha, 291 of 5 to 20 ha, 95 of 20 to 50 ha, 47 of more than 50 ha, and 15 were unsure of the size of their forests. 30% of respondents were aged 60 to 69, and 53% of respondents aged 70 or older. Elderly respondents made up the majority of the respondents, reflecting the ageing of forest owners (Table 1).

Table 1. Age distribution of class divided by size of the forestland (%)

Forest size (ha)	Age class				No of valid responses
	Less than 50	50-59	60-69	70 and above	
<5	4	13	28	56	271
5-<20	3	13	35	50	291
20-<50	2	17	28	53	95
50 or more	2	22	22	54	47
Average/sum of responses	3	14	30	53	704

In response to the question about the largest source of income for the household as a whole (Table 2), the smaller the forest area, the higher the percentage of forest owners who responded ‘pension’. Among the owners of plantation forests of less than 5 ha, 61% gave the same answer (Table 2). Unlike in the other groups, 12% of the large-scale forest owners (>50 ha), reported a main source of income other than from forestry and agriculture.

The structure of responses to questions relating to succession planning is described in Table 3. For the purpose of this study, ‘successor’ means person who is going to inherit forest ownership in the future. Not all successors are descendents of the current forest owners. In Japan, the eldest son usually becomes the first candidate for the succession. Approximately 12% of all forest owners reported that they ‘can not have succession planning’. About 23% responded that they ‘have candidate(s), but have not decided’, 17% have successors who are ‘living separately outside the prefecture’, 22% have successors who are ‘living separately inside same prefecture’ and 27% ‘living together with current householder’. Succession issues with these family farms are therefore becoming a serious issue.

Table 2. Main income source in relation to household income and forest size (%)

Forest size (ha)	Main income source							Number of valid responses
	Salary of permanent job	Pension	Agriculture or Livestock	Daily hires	Forestry	Other family-operated businesses	Others	
<5	23	61	7	1	0	6	1	268
5-<20	25	51	15	2	1	4	1	287
20-<50	22	46	19	2	5	5	0	93
50 or more	26	44	9	0	7	12	2	43
Average/sum of responses	24	54	12	2	2	6	1%	691

Table 3. State of succession planning according to forest size (%)

Forest size (ha)	Succession planning					Number of valid responses
	Have decided on a successor				No succession planning	
	Living together with the current householder	Living separately in the prefecture	Living separately outside the prefecture	Have candidate(s), but have not decided		
<5	31	14	18	22	15	265
5-<20	23	28	16	22	10	286
20-<50	27	21	17	26	9	92
50 or more	26	30	15	24	4	46
Average/sum of responses	27	22	17	23	12	689

Table 4. Distribution of household size in relation to forest area (%)

Forest size (ha)	Number of people per household					Number of valid responses
	Alone	2	3	4	5 and above	
<5	7	41	17	14	22	269
5-<20	8	38	23	11	20	287
20-<50	10	31	27	12	21	94
50 or more	7	39	15	22	17	46
Average/sum of responses	8	38	21	13	20	696

When viewed according to forest size, the smaller the area of forests, the more likely that forest owners do not have succession planning, with 15% of households owning forests of less than 5 ha giving this response. However, the percentage of the group living together with the current householder and the successor is higher than for the group with more than 50 ha, indicating little difference in the state of succession planning according to property size.

Looking at the composition of their current family (Table 4), 'living alone' accounted for 8% of the total, while 'living with one other person' is most common and accounts for 38%, indicating that nearly 50% either live alone or with one other person. There are no clear differences in the number of family members between groups.

Involvement with Forests

The involvement of forest owners with their forests was examined from three angles, namely the knowledge of forest boundaries, the frequency of visits to their forests, and the existence of income from their forests. Looking at the knowledge of their property boundaries, 94% of forest owners with more than 50 ha of plantations either 'know all the boundaries' or 'know most boundaries'. This was the highest percentage. However, even in the group that owned less than 5 ha this figure is 88%, indicating that the difference between groups is relatively small. It seems, therefore, that in all groups, up until the current generation of respondents (most frequently the head of the household), respondents have a clear idea of the boundaries of their forest properties.

Table 5 shows the average number of visits (days) the owners made to their own forests over the past three years. The number is regarded as indicating forest operation level and interest level of the owners to their own forests. A difference was observed between groups. Of those owning plantations of less than 5 ha, 17% have not visited their forests even once, while 70% have visited their forests for between 1 and 29 days. In the group owning 5 to 20 ha, 8% have not visited their forests, while 58% have visited their forests for between 1 and 29 days. In the 20 to 50 ha and more than 50 ha groups there was little difference in the number of days visited, with 10% of households in these groups never visiting their forests, and approximately 50% visiting their forests for between 1 and 29 days.

Table 5. Relative frequency of annual number of visits the owners made to their own forests over the past three years according to forest size (%) (days/year)

Forest size (ha)	The average number of visits over the past three years					No. of valid responses
	None	1-29 days	30-59 days	60-149 days	150 days and more	
<5	17	70	8	3	2	270
5-<20	8	58	22	8	4	289
20-<50	9	48	23	12	7	95
50 or more	7	50	22	15	7	46
Average/sum of responses	12	61	17	7	4	700

With regard to forest income (Table 6), 76% of all the forest owners have not earned income over the past three years. The smaller the forest property, the fewer the opportunities to earn income and the smaller amounts earned. In the less than 5 ha group, about 90% of respondents earned no income, and when combined with households which earned less than 100,000 yen, the relative frequency increases to 98%. On the other hand, in the group of the large-scale forest of more than 50 ha, this figure is 65%, i.e. two out of three owners receive no income from their forests.

Table 6. Relative frequency distribution of average income from forests over the last three years according to forest size (%)

Forest size (ha)	Average income from forests over the last three years						Number of valid responses
	None	Less than 100 M yen	100 – 500 M yen	500 – 1 M yen	1 – 3 M yen	3 M yen and above	
<5	90	8	2	0	0	0	270
5-<20	66	19	11	2	1	0	289
20-<50	66	13	16	4	0	1	95
50 or more	65	14	12	7	2	0	46
Average/sum of responses	76	14	8	2	1	0	700

Note: 100,000 yen = 955 US\$ = €742, approximately, as of December 2005.

Meaning of Forest Ownership

As demonstrated above, it is clear that there is a weakening of the involvement with forests in the groups with small-scale forests, particularly with forests of less than 5 ha. It has been said that the slump in forest management is resulting in a moving away of forest owners from their forests (MAFF 2003). This raises the question of why forest owners continue to own their forests.

Respondents were presented with nine options concerning the implications of ownership, and asked to select all options with which they agreed (Table 7). In all groups, the most common response is ‘family property passed down from ancestors’, accounting for 81% of the total, followed by ‘reserve for contingencies in the future’ with 56%. The larger the area of the properties, the larger the percentage of forest owners who regard their forests as ‘necessary to earn income’, ‘family property passed down from ancestors’ and ‘subject to fixed asset tax, which is a burden’. In addition, 32% of households in the less than 50 ha group regard their forests as ‘land assets’. Conversely, it became clear that the smaller forest properties nominated a higher percentage of the selected attribute ‘proof that I live in the community’ and ‘have never really thought about it’.

Table 7. The meaning of forests to their owners divided into categories according to the size of the property

Forest size (ha)	Meaning of forests to their owners category ^a								
	1	2	3	4	5	6	7	8	9
<5	79	49	9	10	16	4	10	1	4
5- <20	81	62	28	17	15	9	2	5	5
20- <50	81	56	26	11	12	13	4	4	3
50 or more	85	57	43	32	9	15	2	4	0
Average	81	56	21	15	14	8	6	3	4

^aCategories are: 1. Family property passed down from ancestors; 2. Reserve for contingencies in the future; 3. Necessary to earn income; 4. Land assets; 5. Proof that I live in the community; 6. Subject to fixed asset tax, which is a burden; 7. Have never really thought about it; 8. Symbol that I am person of position in the community; and 9. Others.

Note: Multiple responses were allowed.

Future Intent Regarding Forest Management

What intent do forest owners have regarding the management of the forests in the future? Overall, 'would like to continue managing it ourselves in the future' accounts for 34% of survey responses, followed by 'would like to hand it over to my children and have my children manage it' with 26%. Of other responses, 'would like to commission management to a forest owners' cooperative over the long term (10 years or more)' accounts for 17%, while 14% of respondents selected 'would like to continue owning the forest without doing anything in particular'. Viewed according to the size, in the 5 to 20 ha group, 'would like to continue managing it ourselves in the future' accounts for a high percentage at 41%. In the less than 5 ha group, there are a higher percentage of responses for 'would like to continue owning the forest without doing anything in particular' and 'would like to commission management to a forest owners' cooperative over the long term (10 years or more)'.

ANALYSIS OF INTENTION BY FOUR OWNER TYPES

Forest owners were classified into four types according to their intent towards handling of their properties in the future:

1. 'Family management' type (409 respondents, 60%)
 - 'Would like to continue managing it ourselves in the future'
 - 'Would like to hand it down to my children and have my children manage it'
11. 'Commissioned management' type (149 respondents, 23%)
 - 'Would like to designate my forest as a forest reserve and have the forest looked after by a public institution'
 - 'Would like to commission management to a forest owners' cooperative over the long term'

- ‘Would like to commission management to an enthusiastic forestry household over the long term’
 ‘Would like to have the forest managed by a forestry volunteer’
 111. ‘De-accession’ type (15 respondents, 2%)
 ‘I would like to sell my forest together with my land and be done with management’
 1V. ‘Possession without proper management’ type (90 respondents, 14%)
 ‘Would like to continue owning the forest without doing anything in particular’

Attitudes to Forests According to Owner Type

Figure 1 shows the frequency with which forest owners visit their forests. Type I is less common and Type IV more common among forest owners who have few opportunities to visit their forests. Among forest owners who have not visited their forest in the past three years, 41% are oriented towards the ‘IV’ type. This tendency is the same for each group, apart from the more than 50 ha group, which has fewer respondents.

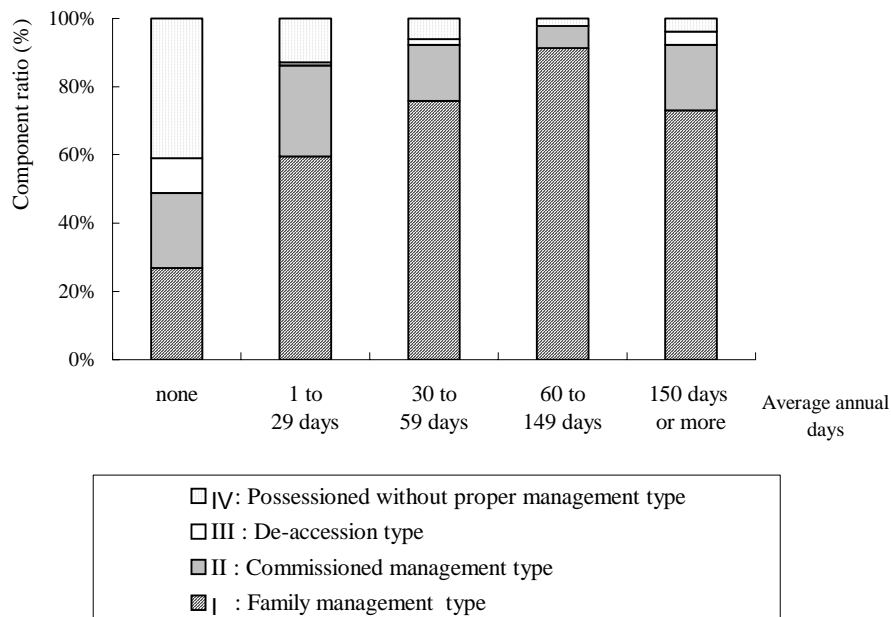


Figure 1. Percentage bar chart of forest household types by average annual days visiting their forest over the last three years

Looking at the state of income from the forests (Figure 2), it is evident that the higher the income from forestry, the higher the percentage of households oriented towards Type I management. Among forest owners who earn 500,000 yen or more from their forests, there are no Type IV forest owners. On the other hand, forest owners oriented towards the Type ‘IV’ management either do not earn any income at all from their forests, or earn less than 100,000 yen per year. As for the Type II owners with income between 1 M and 3 M yen, who prefer commissioned

management, many of them visit their forests more than 150 times a year, as opposed to forest owners with a low income, who have a low level of involvement with their properties.

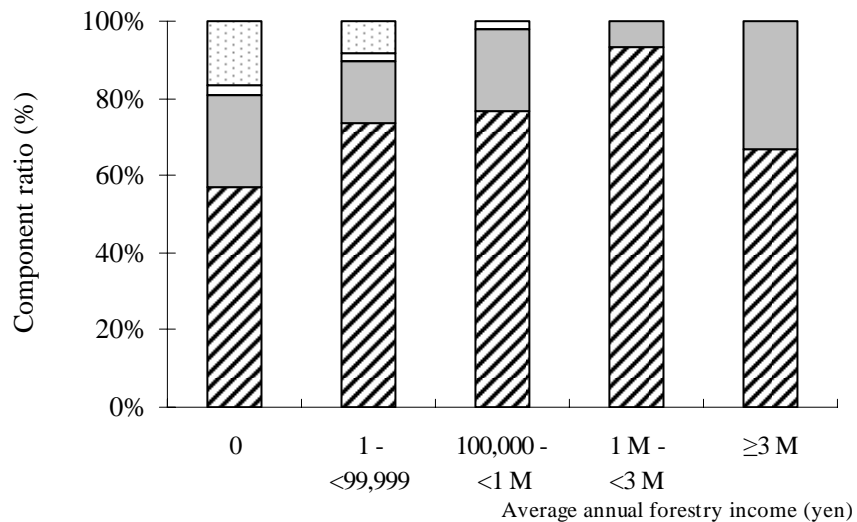


Figure 2. Forest household types divided by the average annual forestry income over the past three years

Note: The patterns of forest household types are as in Figure 1.

Relationship between Owner Type and Age of Respondent

Figure 3 shows the percentages of forest owner types according to the size of the forest area, divided up into respondents aged less than 60 years and those aged 60 or more. In the less than 20 ha group and the greater than 50 ha group, the percentage of Type I owners is higher for respondents aged 60 and older than for respondents aged less than 60 years. A particular difference is marked in the less than 5 ha group, with 37% aged less than 60 in this group preferring 'possession without proper management (IV)'. This suggests that self-management capacity declines as a result of farms being handed down to successive generations.

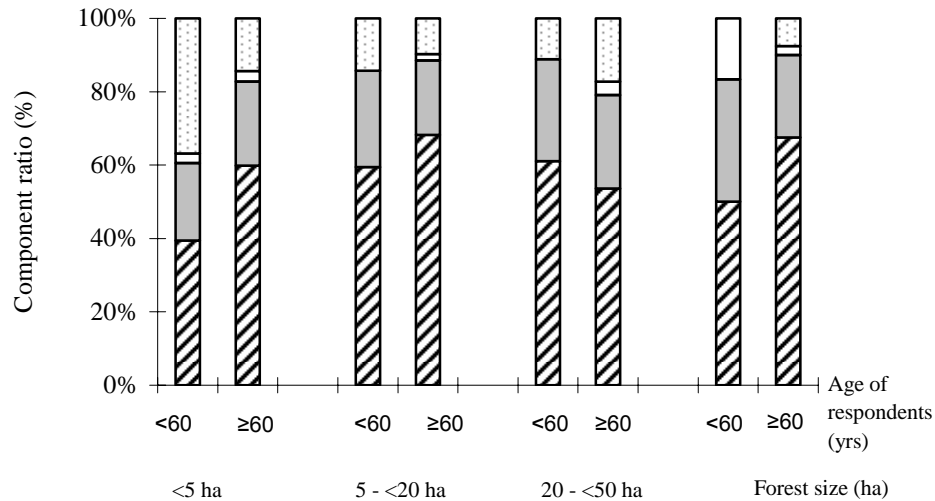


Figure 3. Percentage of forestry household types by forests size and age of respondents

Note: The patterns of forest household types are as Figure 1.

Although the absolute number of responses is small in the 20 to 50 ha group, a higher percentage of forest owners aged less than 60 years prefer 'family management (I)' relative to households aged more than 60 years, and the percentage of the type IV households is lower.

Sustainability of Management in Terms of Successors and Types of Forest Owners

The relationship between the existence of a successor and the owner type, shows that about 60% to 80% of forest owners who have a successor are oriented towards type I management (Figure 4). On the other hand, this figure drops to around 40% for those who do not have a successor. A higher percentage of forest owners who have a definite successor carry out 'family management' while conversely, owners who 'have not decided on a successor yet' or 'can't have succession planning' are more oriented towards types II and IV management. Among owners who 'do not have a successor', in the 20 ha or more groups, a higher percentage are oriented towards type II, but in the less than-20 ha groups, particularly in the less than 5 ha group, a high percentage of respondents are oriented towards type IV management.

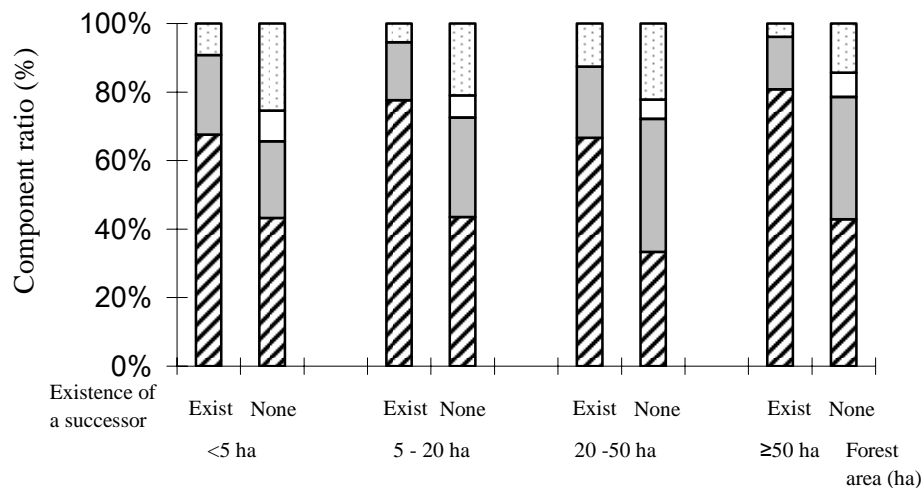


Figure 4. Relative frequency of forestry household types in relation to existence of a successor and forest's size

Note: The patterns of forest household types are as Figure 1.

Sustainability in 'Family Management (I)' Type Forest Owners

The sustainability of type I forest owners, who have successors, needs to be viewed in relation to the number of members of the household. Approximately 80% of households have decided on a successor. However, looking at the breakdown of successors, it is frequently the case that the successor does not live together with the respondent, but somewhere else within the prefecture or even in another prefecture. As a result, forest owners comprising one or two members at present accounted for about 50%, and when added to owners who lack a successor, approximately 60% of 'family management' type households may reduce their forest management standards or even become absentee forest owners when forests are passed down to the next generation.

Characteristics of Four Types of Forest Owners

Based on the above analysis, the characteristics of the four types may be summarised as follows:

1. The 'family management (I)' type accounts for approximately 60% of the owners. A larger number of owners regard their forest properties as 'necessary to earn income' or as 'reserves for the future' than in other types, and they are highly involved with their forests. Although they have secured successors to a higher degree than other categories, a large percentage is elderly with one or two members, and there is a danger that they may become absentee forest owners, depending on future succession.
2. The second largest group is the 'commissioned management (II)' type. While this type has the second highest level of involvement with forests after Type I, many owners in this type have difficulty in securing a successor. In addition, close to 90% of forest owners regard their forests as 'family

property passed down from ancestors' so they are unwilling to sell their properties. They have a strong intention to manage their forests, and intend to commission management in the future.

3. The 'de-accession (III)' type has a weaker awareness than other types that their forests are 'family property passed down from ancestors' while at the same time many owners feel that 'the forest is subject to fixed asset tax, which is a burden'. There are a large number of households which are unable to secure successors, and there are many who are willing to sell their forests and withdraw from forest management completely. Forest owners generally hope to sell their forests to the prefecture or municipality.
4. Finally, the 'possession without proper management (IV)' type is characterised by a low frequency with which forests are visited, and extremely few opportunities to earn income from the forests. In addition, a large percentage 'has never thought' about their awareness of the forests, so the degree of involvement with their forests is lower than in other types. It is revealed that the orientation towards 'possession without proper management' is strong among young respondents in the less than 5 ha group.

DISCUSSION

The survey of forest owners in Yamaguchi Prefecture, Japan, where there is a dominance of small-scale forest owners, revealed the ageing of forest owners and a varying but sometimes low-intensity forest management. It was found that 83% of 687 plantation forest owners who responded in a survey were 60 years or older and 76% did not have forestry income over the past three years, but 81% had kept up ownership of their forest as the traditional family property. Many aging forest owners maintained an intention to take care of 'family property passed down from ancestors' and pass this on to the next generation, even in a situation in which there is little prospect of income from their properties in the foreseeable future.

The analysis by forest size showed that there were differences in the income level from their forests, the number of visits (days) the owners made to their own forests and the implications of forest ownership between the less than 5 ha group and other groups. In the less than 5 ha group, about 90% of respondents earned no income over the last three years. However, there were little differences in main income source, number of people per household and succession planning among groups according to forest size. About 80% of respondents in the less than 5 ha group regarded their forests as 'family property passed down from ancestors'.

Forest owners were divided into four types according to their intent towards the handling of their properties in the future. The 'family management' type households (60% of the total), which intend to carry out forest management by themselves and their children, have successors and are properly maintaining their properties. However, the majority of this type is unsure about succession to the next generation, and in the near future when the forest owners aged in their 60s or 70s retire, depending on the method of succession of the forest, it is possible that these households may become absentee owners or shift to other types. When succession occurs in households shifting from the 'family management' type to other types, the local government and forest owners' cooperatives should contact the new owners

and consult about the forest management planning individually in order to ensure sustainable forest management in the future.

‘Possession without proper management’ type households which have been abandoning their management accounted for approximately 10% of the sample. Most of these households already have a diminished involvement with their forests, so it is necessary to introduce new effective measures. Forestry households in this group clearly earned no income from their forests, and the percentage of the households who have not visited their forests even once within the last three years was much higher than in other groups.

Against the backdrop of the current situation in which close to 70% of forestry households in all the groups reportedly earn no income from their forests, when asked why they continue to maintain ownership of their forests, the overwhelmingly common response was because ‘it was passed down from ancestors’. However, among young forest owners in the less than 5 ha group, it became clear that there was a stronger orientation towards ‘possession without proper management’. Whether a shift towards the ‘family management’ type occurs in the same way as in households which are currently elderly when the forest owners of the next generation become elderly, is a point which should be monitored in the future.

Government policies for forest owners should be instituted according to the type of management. The ‘family management (I)’ type owners who regard forests as ‘sources of income’ and ‘reserves for the future’ require policies to ensure income, and political follow-up to ensure that management awareness does not decline before and after forests are passed down to future generations. In addition, ‘commissioned management (II)’ and ‘de-accession (III)’ types need forest owners’ cooperatives and municipalities to enhance their specific acceptance and mediation frameworks. The forestland usage agreements with volunteer organisations should also be examined in the future, since Yamaguchi Prefecture is one of the most active prefectures in terms of volunteering for forest maintenance (Fuchigami 2004).

For the ‘possession without proper management (IV)’ type, initially there is a need to review the way in which forest information is distributed, because most of the owners derive their income from non-forestry sources and have not visited their properties in last three years. A high percentage of the owners who are in their 30s and 40s do not have experience with forestry operations nor any memories of their own forest, so it is necessary to incorporate them into the scene of community forest management through creative plans with a ‘tour’ feel, such as some volunteer interchange activities (Asada 2004).

REFERENCES

- Asada, S. and Sato, N. (2004), ‘Effects of interchange activities between mountain villages and cities on the aged in mountain villages’, *Kyushu Journal of Forest Research*, 57: 18-21.
- Cabinet Office (2003), *Annual Report on the Ageing Society*, Gyousei, Tokyo.
- Fuchigami, S. and Sato, N. (2004), ‘A study of the support measures for volunteers on forest conservation’, *Kyushu Journal of Forest Research*, 57: 14-17.
- Fukawa, T. and Sato, N. (2003), ‘Forestry household members with forestry workdays in the World Census of Agriculture and Forestry’, *Kyushu Journal of Forest Research*, 56: 9-12.
- Horiuchi, T. and Ogawa, T. (2000), *Local Policies in Aged Society*, Minervashobo, Kyoto.
- MAFF (The Ministry of Agriculture, Forestry and Fisheries) (2000), *The World Census of Agriculture and Forestry in 2000*, Association of Agriculture and Forestry Statistics, Tokyo.

- MAFF (The Ministry of Agriculture, Forestry and Fisheries in Japan) (2003), *Annual Report on Trends of Forest and Forestry*, Japan Forestry Association, Tokyo.
- Nakamura, A. and Sato, N. (2002), 'An existence of the aged and issues of rural development in mountain villages: Survey on the aged of Kamitsue Village in Oita', *Bulletin of the Kyushu University Forests*, 83: 63-77.
- Ogawa, T. (2003), 'Continuity and reorganisation of local communities: regional ageing and sociological researches', *Studies on the History of Sociology*, 25: 31-42.
- Sato, N. (2005), 'Considerations of mutual relationships between forest resource management and sustainability of mountain society', *Journal of Forest Economics*, 51(1): 3-14.